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APPLICATION

FOR

UNITED STATES OF AMERICA

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SPECIFICATION

TO ALL WHOM IT MAY CONCERN:

Be it known that We,

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have invented certain improvements in

“METHOD FOR PRODUCING OPEN-KNIT FABRIC WITH  
MACHINES FOR KNITTING HOSIERY OR OTHER ARTICLES, AND  
OPEN-KNIT ARTICLE OBTAINED WITH THE METHOD”

of which the following description in connection with the accompanying  
drawings is a specification, like reference characters on the drawings  
indicating like parts in the several figures.

5       The present invention relates to a method for producing open-knit fabric with machines for knitting hosiery or other articles, and to an open-knit article obtained with the method.

### **Background of the Invention**

      Machines for knitting hosiery or other articles are known which are  
10   capable of transferring a loop from the needle that formed it to a contiguous needle. A machine of this kind is disclosed for example in the published patent document no. WO 02/070799.

      In the field of the production of knitted textile articles, in particular in the field of knitwear and hosiery, there is a constant demand for articles that  
15   are aesthetically enhanced by means of decorations, among which openwork is particularly appreciated. There is therefore a constant search, on the part of knitting experts, for new weaves of knitting in order to devise openwork with holes of various sizes and for new shapes to obtain innovative aesthetic effects.

### **20   Summary of the Invention**

      The aim of the present invention is to meet these requirements by providing a method that by using the method of transferring the loop from one needle to a contiguous needle in combination with the formation of conventional stitches allows to produce open-knit fabric.

25       Within this aim, an object of the invention is to provide a method that allows to obtain openwork with holes of various sizes and shapes, capable of meeting the most disparate aesthetic requirements.

      Another object of the invention is to provide a method that can be performed in the production of knitted items of clothing both on circular  
30   machines and on rectilinear machines.

This aim and these and other objects that will become better apparent hereinafter are achieved by a method for producing open-knit fabric with machines for knitting hosiery or other articles, which consists in producing in succession rows of knitting by means of a plurality of needles of the machine that is used, characterized in that it consists in performing openwork constituted by holes, each of which is provided by means of a group of needles in which a first needle, after taking part in the formation of a first row of knitting, is freed from the loop of said first row of knitting by transferring said loop to a second needle that is contiguous to said first needle, said first needle being actuated so as to resume knitting, forming a new loop of a row of knitting that is subsequent to said first row.

### **Brief Description of the Drawings**

Further characteristics and advantages of the invention will become better apparent from the description of some preferred but not exclusive embodiments of the method according to the invention, illustrated by way of nonlimiting example in the accompanying drawings, wherein:

Figures 1 to 7 are views of portions of a knitted fabric, shown highly enlarged and from the reverse side, each portion having a different type of hole obtained with an embodiment of the method according to the invention.

### **Description of the preferred Embodiments**

With reference to the figures, the method according to the invention consists in producing, in succession, rows of knitting in order to produce a knitted fabric; during said rows, openwork is performed which is constituted by holes, each of which is obtained by means of a group of needles in which a first needle, after taking part in the formation of a first row of knitting, is freed from the loop just formed during the formation of the first row, transferring said loop to a second needle that is contiguous to the first needle. The first needle is actuated again to resume knitting, forming a new loop in the formation of a row of knitting that is subsequent to the first row of knitting.

The first needle can resume knitting, after the transfer of the loop formed during the formation of the first row, during the formation of the row of knitting that directly follows the first row of knitting, or during the formation of a row of knitting that is spaced from the first row of knitting by  
5 a preset number of intermediate rows of knitting.

Furthermore, the transfer of the loop from one needle to a contiguous needle can also affect the needles that are contiguous to the first needle after forming rows of knitting that are subsequent to the first row of knitting, so as to gradually free more needles.

10 The delay in resuming knitting on the part of the needle or needles freed by the transfer of the corresponding loop and/or the gradual increase in the needles freed by the transfer of the corresponding loop allow to increase the dimensions of the hole. Moreover, these solutions and any variation in the type of stitch performed by said needles when knitting  
15 resumes allow to also vary the shape of the hole.

Figures 1 to 7 illustrate by way of example seven types of hole that can be obtained with the method according to the invention.

In the description that follows, for the sake of simplicity and greater clarity, it is assumed that the loops formed by each needle in the production  
20 of a row of knitting are provided by means of a single thread, but the method according to the invention can also be performed by forming loops that are each composed of two or more threads fed simultaneously to the needles.

In the figures, the rows of knitting have been designated by uppercase  
25 letters. For the sake of simplicity in description, each needle is designated hereinafter by the numeral that designates, in the drawings, the column of loops knitted by the same needle. The thread of each row of knitting is designated by a lowercase letter that is the same as the uppercase letter that designates the row of knitting. The loop of a row of knitting formed by a  
30 needle is designated by the numeral of the column of loops to which it

belongs (i.e., with the numeral that also designates the needle that forms said column of loops) and by a lowercase letter that is the same as the uppercase letter that designates said row of knitting.

In the description that follows it is assumed, for the sake of simplicity, that the needles that form the knitting are arranged vertically, as occurs in a needle cylinder of a circular knitting machine for hosiery or other articles, and therefore for example the expressions "needle lifting" for needle engagement and "needle lowering" for forming the loop are used, without altering the fact that the various described types of knitting can also be performed by means of needles that are arranged horizontally or are variously inclined with respect to the vertical.

The hole shown in Figure 1 is obtained, during the formation of the knitting, by using a group of needles constituted by two needles, respectively a first needle 1 and a second needle 2, which are contiguous.

In order to form said hole, the first needle 1, after taking part with other needles in the formation of a first row of knitting A with a thread "a", is freed from the loop 1a, formed during the formation of said row of knitting A, by transferring the loop 1a onto the second needle 2, which in this manner carries its own loop 2a and the loop 1a.

After the first row of knitting A, a second row of knitting B is formed by means of a thread "b" by actuating, together with the other needles that take part in the formation of the row of knitting B, the first needle 1 and the second needle 2, which form respective loops 1b and 2b. The first needle 1 and the second needle 2, during the engagement of the thread "b", are both lifted to the drop-stitch level, so that the loops 1a and 2a pass below the latch of the second needle 2. The formation of the loop 1b, as a consequence of the descent of the needle 1, since the needle 1 is free, does not form an actual stitch, but simply forms a so-called "bend", while the formation of the loop 2b drops the loops 1a, 2a with which the loop 2b is knitted in.

A third row of knitting C is then formed with a thread "c", which is

knitted not only by other needles that take part in the formation of the row of knitting C but also by both of the needles 1 and 2, which are lifted so as to engage the thread "c" at a drop-stitch level, so that the loops 1b and 2b pass below the latch of the corresponding needle. The subsequent lowering of said needles 1 and 2 forms two loops 1c and 2c, which are knitted in respectively with the loops 1b and 2b, which are dropped by said needles. At this point, the hole shown in Figure 1 is complete.

The hole shown in Figure 2 is obtained, during the formation of the knitting, by using a group of needles again constituted by two needles, respectively a first needle 1 and a second needle 2, which are contiguous.

In order to form said hole, the first needle 1, after taking part with other needles in the formation of a first row of knitting A with a thread "a", is freed from the loop 1a, formed during the formation of said row of knitting A, by transferring the loop 1a onto the second needle 2, which in this manner carries its own loop 2a and the loop 1a.

After the first row of knitting A, a second row of knitting B is formed by means of a thread "b". The first needle 1 is excluded from the knitting of the second row of knitting B, while the second needle 2 is actuated together with the other needles that take part in the formation of the row of knitting B. In this manner, a bridge 1b is formed at the first needle knitting 1, while the second needle 2 forms a loop 2b. The second needle 2, during the engagement of the thread "b", is lifted to the drop-stitch level, so that the loops 1a and 2a pass below the latch of the second needle 2. The formation of the loop 2b drops the loops 1a, 2a, with which the loop 2b is knitted in.

A third row of knitting C is then formed with a thread "c", which is knitted not only by other needles that take part in the formation of the row of knitting C but also by both needles 1 and 2, which are lifted to engage the thread "c" at a drop-stitch level, so that the loop 2b passes below the latch of the second needle 2. The subsequent lowering of said needles 1 and 2 forms two loops 1c and 2c. The formation of the loop 1c following the descent of

the needle 1, since the needle 1 is free, does not form an actual stitch, but simply forms a so-called "bend", while the formation of the loop 2c drops the loop 2b with which the loop 2c is knitted in.

After the third row of knitting C, a fourth row of knitting D is formed  
 5 with a thread "d" that is knitted not only by other needles that take part in the formation of the row of knitting D but also by both of the needles 1 and 2, which are lifted to engage the thread "d" at a drop-stitch level, so that the loops 1c and 2c pass below the latch of the corresponding needle. The subsequent lowering of said needles 1 and 2 forms two loops 1d and 2d,  
 10 which are knitted in respectively with the loops 1c and 2c, which are dropped by said needles. At this point, the hole shown in Figure 2 is completed.

The hole shown in Figure 3 is obtained, during the formation of the knitting, by using a group of needles that is again constituted by two  
 15 needles, respectively a first needle 1 and a second needle 2, which are contiguous.

In order to form said hole, the first needle 1, after taking part, together with other needles, in the formation of a first row of knitting A with a thread "a", is freed from the loop 1a, formed during the formation of said row of  
 20 knitting A, by transferring the loop 1a onto the second needle 2, which in this manner carries its own loop 2a and the loop 1a.

After the first loop A, a second row of knitting B is formed by means of a thread "b" by actuating, together with the other needles that take part in the formation of the row of knitting B, also the first needle 1 and the second  
 25 needle 2, which form respective loops 1b and 2b. The first needle 1 and the second needle 2, during the engagement of the thread "b", are raised to the drop-stitch level, so that the loops 1a and 2a pass below the latch of the second needle 2. The formation of the loop 1b following the descent of the needle 1, since the needle 1 is free, does not form an actual stitch, but  
 30 simply forms a so-called "bend", while the formation of the loop 2b drops

the loops 1a, 2a with which the loop 2b is knitted in.

A third row of knitting C is then formed with a thread "c", which is knitted not only by other needles that take part in the formation of the row of knitting C but also by both needles 1 and 2. During the formation of this  
 5 row of knitting C, the first needle 1 is lifted to engage the thread "c" at a tuck-stitch level, so that the loop 1b does not pass below its latch, while the second needle 2 is lifted to engage the thread "c" at a drop-stitch level, so that the loop 2b passes below its latch. The subsequent lowering of said needles 1 and 2 produces the formation of a loop 1c, with the loop 1b tucked  
 10 thereon, on the part of the needle 1, and of a loop 2c on the part of the needle 2 that drops the loop 2b.

After the third row of knitting C, a fourth row of knitting D is formed with a thread "d", which is knitted not only by other needles that take part in the formation of the row of knitting D but also by both needles 1 and 2,  
 15 which are lifted to engage the thread "d" at a drop-stitch level, so that the loops 1b, 1c on the needle 1 and 2c on the needle 2 pass below the latch of the corresponding needle. The subsequent lowering of said needles 1 and 2 forms two loops 1d and 2d, which are knitted in respectively with the loops 1b, 1c and 2c, which are dropped by said needles. At this point, the hole  
 20 shown in Figure 3 is completed.

The hole shown in Figure 4 is obtained, during the formation of the knitting, by using a group of needles constituted by three needles, respectively a first needle 1, a second needle 2, and a third needle 3, which are contiguous.

25 In order to form said hole, the first needle 1, after taking part together with other needles in the formation of a first row of knitting A with a thread "a", is freed from the loop 1a, formed during the formation of said row of knitting A, by way of the transfer of the loop 1a onto the second needle 2, which in this manner carries its own loop 2a and the loop 1a, while the third  
 30 needle 3 carries the corresponding loop 3a.



After the first row of knitting A, a second row of knitting B is formed by means of a thread "b". The first needle 1 is excluded from the knitting of the second row of knitting B, while the second needle 2 and the third needle 3 are actuated together with the other needles that take part in forming the row of knitting B. In this manner, a bridle 1b is formed at the first needle 1, while the second needle 2 and the third needle 3 form respective loops 2b and 3b. The second needle 2, during the engagement of the thread "b", is lifted to the drop-stitch level, so that the loops 1a and 2a pass below the latch of the second needle 2. The formation of the loop 2b drops the loops 1a, 2a with which the loop 2b is knitted in. After forming the second row of knitting B, the second needle 2 also is freed from the loop 2b, which is transferred onto the third needle 3, which in this manner carries the loops 2b and 3b.

A third row of knitting C is then formed with a thread "c" that is knitted not only by other needles that take part in the formation of the row of knitting C but also by the needles 1, 2 and 3, which are lifted to engage the thread "c" at a drop-stitch level, so that the loops 2b and 3b pass below the latch of the third needle 3. The subsequent descent of the needles forms three loops 1c, 2c, 3c. The formation of the loops 1c and 2c as a consequence of the descent of the needles 1 and 2, since said needles are free, forms two "bends", while the formation of the loop 3c causes the third needle 3 to drop the loops 2b, 3b.

After the third row of knitting C, a fourth row of knitting D is formed with a thread "d", which is knitted not only by other needles that take part in the formation of the row of knitting D but also by the needles 1, 2 and 3. The needles 1 and 3 are lifted, in order to engage the thread "d", to a drop-stitch level so that the loops 1c and 3c pass below the latch of the corresponding needle. The subsequent lowering of said needles 1 and 3 forms two loops 1d and 3d, which are knitted in respectively with the loops 1c and 3c, which are dropped by said needles. The second needle 2, in order

to engage the thread "d", is raised to a tuck-stitch level, so that the loop 2c does not pass below the latch of said needle. The subsequent lowering of the second needle 2 forms a loop 2d, retaining the loop 2c in the beak of said needle.

5        After the fourth row of knitting D, a fifth row of knitting E is formed with a thread "e", which is knitted not only by other needles that take part in the formation of the row of knitting E but also by the needles 1, 2 and 3. The needles 1, 2 and 3 are lifted, in order to engage the thread "e", to a drop-stitch level so that the loops 1d, 2c, 2d and 3d pass below the latch of the  
10        corresponding needle. The subsequent lowering of said needles 1, 2 and 3 forms three loops 1e, 2e and 3e, which are knitted in respectively with the loop 1d, with the loops 2c, 2d and with the loop 3d, which are dropped by said needles.

At this point, the hole shown in Figure 4 is complete.

15        The hole shown in Figure 5 is obtained, during the formation of the knitting, by using a group of needles constituted by three needles, respectively a first needle 1, a second needle 2, and a third needle 3, which are contiguous.

In order to form said hole, the first needle 1, after taking part together  
20        with other needles in the formation of a first row of knitting A with a thread "a", is freed from the loop 1a, formed during the formation of said row of knitting A, by transferring the loop 1a onto the second needle 2, which in this manner carries its own loop 2a and the loop 1a, while the third needle 3 carries the corresponding loop 3a.

25        After the first row of knitting A, a second row of knitting B is formed by means of a thread "b". The first needle 1 is excluded from the knitting of the second row of knitting B, while the second needle 2 and the third needle 3 are actuated together with the other needles that take part in the formation of the row of knitting B. In this manner, a bridle 1b forms at the first needle  
30        1, while the second needle 2 and the third needle 3 form respective loops 2b

and 3b. The second needle 2, during the engagement of the thread b, is lifted to the drop-stitch level, so that the loops 1a and 2a pass below the latch of the second needle 2. The formation of the loop 2b unloads the loops 1a, 2a with which the loop 2b is knitted in. After the formation of the second row of knitting B, the second needle 2 also is freed from the loop 2b, which is transferred onto the third needle 3, which in this manner carries the loops 2b and 3b.

A third row of knitting C is then formed with a thread "c", which is knitted not only by other needles that take part in the formation of the row of knitting C but also by the needles 1, 2 and 3, which are lifted in order to engage the thread "c" at a drop-stitch level, so that the loops 2b and 3b pass below the latch of the third needle 3. The subsequent lowering of the needles forms three loops 1c, 2c, 3c. The formation of the loops of knitting 1c and 2c following the descent of the needles 1 and 2, since said needles were free, forms two "bends", while the formation of the loop 3c makes the third needle 3 drop the loops 2b, 3b.

After the third row of knitting C, a fourth row of knitting D is formed with a thread d, which is knitted not only by other needles that take part in the formation of the row of knitting D but also by the needles 1 and 3, while the needle 2 is excluded from knitting and retains, in its beak, the loop 2c formed previously. The needles 1 and 3 are lifted, in order to engage the thread d, to a drop-stitch level, so that the loops 1c and 3c pass below the latch of the corresponding needle. The subsequent lowering of said needles 1 and 3 forms two loops 1d and 3d, which are knitted in respectively with the loops 1c and 3c, which are dropped by said needles. A bridle 2d is formed at the needle 2 excluded from knitting.

After the fourth row of knitting D, a fifth row of knitting E is formed with a thread e, which is knitted not only by other needles that take part in the formation of the row of knitting E but also by the needles 1, 2 and 3. The needles 1, 2 and 3 are lifted in order to engage the thread e; at a drop-stitch

level, so that the loops 1d, 2c and 3d pass below the latch of the corresponding needle. The subsequent lowering of said needles 1, 2 and 3 forms three loops 1e, 2e and 3e, which are knitted in respectively with the loop 1d, with the loop 2c and with the loop 3d, which are dropped by said  
 5 needles.

At this point, the hole shown in Figure 5 is complete.

The hole shown in Figure 6 is obtained, during the formation of the knitting, by using a set of needles constituted by three needles, respectively a first needle 1, a second needle 2, and a third needle 3, which are  
 10 contiguous.

In order to form said hole, the first needle 1, after taking part together with other needles in the formation of a first row of knitting A with a thread "a", is freed from the loop 1a formed during the formation of said row of knitting A, which in this manner, by way of the transfer of the loop 1a onto  
 15 the second needle 2, which in this manner carries its own loop 2a and the loop 1a, while the third needle 3 carries the corresponding loop 3a.

After the first row of knitting A, a second row of knitting B is formed by means of a thread "b". The first needle 1 is excluded from knitting the second row of knitting B, while the second needle 2 and the third needle 3  
 20 are actuated together with the other needles that take part in the formation of the row of knitting B. In this manner, a bridle 1b forms at the first needle 1, while the second needle 2 and the third needle 3 form respective loops 2b and 3b. The second needle 2, during the engagement of the thread "b", is raised to the drop-stitch level, so that the loops 1a and 2a pass below the  
 25 latch of the second needle 2. The formation of the loop 2b drops the loops 1a, 2a with which the loop 2b is knitted in. After the formation of the second loop B, the second needle 2 also is freed from the loop 2b, which is transferred onto the third needle 3, which in this manner carries the loops 2b and 3b.

30 Subsequently, a third row of knitting C is formed with a thread "c",

which is knitted not only by other needles that take part in the formation of the row of knitting C but also by the needles 1, 2 and 3, which are raised to engage the thread "c" at a drop-stitch level, so that the loops 2b and 3b pass below the latch of the third needle 3. The subsequent lowering of the  
 5 needles forms three loops 1c, 2c, 3c. The formation of the loops 1c and 2c as a consequence of the descent of the needles 1 and 2, since said needles are free, forms two "bends", while the formation of the loop 3c makes the third needle 3 drop the loops 2b, 3b.

After the third row of knitting C, a fourth row of knitting D is formed  
 10 with a thread "d", which is knitted not only by other needles that take part in the formation of the row of knitting D but also by the needles 1, 2 and 3. The needles 2 and 3 are raised, in order to engage the thread "d", at a drop-stitch level, so that the loops 2c and 3c pass below the latch of the corresponding needle. The subsequent lowering of said needles 2 and 3  
 15 forms two loops 2d and 3d, which are knitted in respectively with the loops 2c and 3c, which are dropped by said needles. The first needle 1, in order to engage the thread "d", is raised to a tuck-stitch level, so that the loop 1c does not pass below the latch of said needle. The subsequent lowering of the first needle 1 forms a loop 1d, with retention of the loop 1c in the beak of  
 20 said needle.

After the fourth row of knitting D, a fifth row of knitting E is formed with a thread "e", which is knitted not only by other needles that take part in the formation of the row of knitting E but also by the needles 1, 2 and 3. The  
 25 needles 1, 2 and 3 are raised, in order to engage the thread "e", to a drop-stitch level, so that the loops 1c, 1d, 2d and 3d pass below the latch of the corresponding needle. The subsequent lowering of said needles 1, 2 and 3 forms three loops 1e, 2e, and 3e, which are knitted in respectively with the loops 1c, 1d, with the loop 2d, and with the loop 3d, which are dropped by said needles.

30 At this point, the hole shown in Figure 6 is complete.

The hole shown in Figure 7 is obtained, during the formation of the knitting, by using a group of needles constituted by four needles, respectively a first needle 1, a second needle 2, a third needle 3 and a fourth needle 4, which are contiguous.

5        In order to form said hole, the first needle 1, after taking part, together with other needles, in the formation of a first row of knitting A with a thread "a", is freed from the loop 1a, formed during the formation of said row of knitting A, by way of the transfer of the loop 1a onto the second needle 2, which in this manner carries its own loop 2a and the loop 1a, while the third  
10        needle 3 carries the corresponding loop 3a and the fourth needle carries the corresponding loop 4a.

After the first row of knitting A, a second row of knitting B is formed by means of a thread "b". The first needle 1 is excluded from the knitting of the second row of knitting B, while the second needle 2, the third needle 3  
15        and the fourth needle 4 are actuated together with the other needles that take part in the formation of the row of knitting B. In this manner, a bridle 1b forms at the first needle 1, while the second needle 2, the third needle 3 and the fourth needle 4 form respective loops 2b, 3b and 4b. The second needle 2, during the engagement of the thread "b", is raised to the drop-stitch level,  
20        so that the loops 1a and 2a pass below the latch of the second needle 2. The formation of the loop 2b drops the loops 1a, 2a with which the loop 2b is knitted in. After the formation of the second row of knitting B, the second needle 2 also is freed from the loop 2b, which is transferred onto the third needle 3, which in this manner carries the loops 2b and 3b.

25        After the second row of knitting B, a third row of knitting C is formed by means of a thread "c". The first needle 1 remains excluded from the knitting also of the third row of knitting C, and the second needle 2 is also excluded from knitting, while the third needle 3 and the fourth needle 4 are actuated together with the other needles that take part in the formation of the  
30        row of knitting C. In this manner, bridles 1c and 2c form at the first needle 1

and at the second needle, while the third needle 3 and the fourth needle 4 form respective loops 3c and 4c. The third needle 3, during the engagement of the thread "c", is raised to the drop-stitch level, so that the loops 2b and 3b pass below the latch of the third needle 3. The formation of the loop 3c drops the loops 2b, 3b with which the loop 3c is knitted in. After forming the third row of knitting C, the third needle 3 also is freed from the loop 3c, which is transferred onto the fourth needle 4, which in this manner carries the loops 3c and 4c.

A fourth row of knitting D is then formed with a thread "d", which is knitted not only by other needles that take part in the formation of the row of knitting D but also by the needles 1, 2, 3 and 4, which are raised to engage the thread "d" at a drop-stitch level, so that the loops 3c and 4c pass below the latch of the fourth needle 4. The subsequent lowering of the needles forms four loops 1d, 2d, 3d and 4d. The formation of the loops 1d, 2d and 3d following the descent of the needles 1, 2 and 3, since said needles are free, forms three "bends", while the formation of the loop 4d makes the fourth needle 4 drop the loops 3c and 4c.

After the fourth row of knitting D, a fifth row of knitting E is formed with a thread "e", which is knitted not only by other needles that take part in the formation of the row of knitting E but also by the needles 1, 2, 3 and 4. The needle 1 and the needle 4 are raised to engage the thread "e" at a drop-stitch level so that the loops 1d and 4d pass below the latch of the corresponding needle. The subsequent lowering of said needles 1 and 4 forms two loops 1e and 4e, which are knitted in respectively with the loops 1d and 4d, which are dropped by said needles. The second needle 2 and the third needle 3, in order to engage the thread "e", are lifted to a tuck-stitch level so that the corresponding loops 2d, 3d do not pass below the latch of said needles. The subsequent lowering of said needles 2 and 3 forms loops 2e, 3e, with retention of the loops 2d, 3d in the beak of said needles.

After the fifth row of knitting E, a sixth row of knitting F is formed

with a thread "f", which is knitted not only by other needles that take part in the formation of the row of knitting F but also by the needles 1, 2, 3 and 4. The needles 1, 2 and 4 are raised, in order to engage the thread "f", to a drop-stitch level so that the loops 1e, 2d, 2e and 4e pass below the latch of the corresponding needle. The subsequent lowering of said needles 1, 2 and 4 forms three loops 1f, 2f and 4f, which are knitted in respectively with the loop 1e, with the loops 2d and 2e, and with the loop 4e, which are dropped by said needles. The third needle 3, in order to engage the thread "f", is raised to a tuck-stitch level so that the loops 3d, 3e do not pass below the latch of said needle. The subsequent lowering of the needle 3 forms a loop 3f, with retention of the loops 3d, 3e in the beak of said needle.

After the sixth row of knitting F, a seventh row of knitting G is formed with a thread "g", which is knitted not only by other needles that take part in the formation of the row of knitting G but also by the needles 1, 2, 3 and 4. The needles 1, 2, 3 and 4 are raised, in order to engage the thread "g", to a drop-stitch level so that the loops 1f, 2f, 3d, 3e, 3f and 4f pass below the latch of the corresponding needle. The subsequent lowering of said needles 1, 2, 3 and 4 forms four loops 1g, 2g, 3g and 4g, which are knitted in respectively with the loop 1f, with the loop 2f, with the loops 3d, 3e, 3f, and with the loop 4f, which are dropped by said needles.

At the point, the hole shown in Figure 7 is complete.

In the description of the method for forming the various holes, it has been stated that when knitting resumes, the needles that had been freed by transferring the loop onto the contiguous needle are raised to a drop-stitch level. Although this constitutes the preferred manner, since it avoids actuating said needles in a diversified manner with respect to the contiguous needles that must form new loops and drop the loops received or formed previously, it is not a binding aspect, and said needles can resume knitting also by means of a lifting to the tuck-stitch level, since by being free there is no problem of dropping or retaining previously formed or received loops.



The embodiments described have been given merely by way of non-limiting example, in order to better explain the underlying concept of the invention. By following the teaching on which the invention is based, it is possible to perform openwork with holes whose dimensions and shapes can  
5 be varied simply by:

- varying the number of needles gradually freed by transferring their loop to a contiguous needle;
- varying the number of rows of knitting during which said needles are excluded from knitting; and
- 10 -- varying the type of stitch formed by said needles when they are moved to knit again.

The description given above regarding the execution of the holes has been restricted to the actuation of the group of needles used to form the hole. The actuation of the other needles of the machine in the formation of  
15 the various rows of knitting to form the regions of knitting that are contiguous to the hole may be any, depending on the requirements, although preference is given, in the vicinity of the holes, to plain knitting, as shown in the figures.

Obviously, in the production of a knitted article, the holes that can be  
20 obtained with the method according to the invention can be repeated several times in the production of the article, and holes having different shapes and/or dimensions may be optionally combined in various manners, depending on the aesthetic effect to be obtained.

The method according to the invention is performed preferably with a  
25 machine of the type disclosed in the published patent document WO-02/070799, but can be performed in any case with other machines that allow to transfer a loop from one needle to a contiguous needle.

In practice, it has been found that the method according to the invention fully achieves the intended aim, since by using the technique of  
30 transferring the loop from one needle to a contiguous needle in combination

with the formation of conventional stitches, it allows to form open-knit fabric with holes that have various dimensions and/or shapes according to the requirements.

In the examples of embodiments described above, individual  
5 characteristics, given in relation to specific examples, may actually be interchanged with other different characteristics that exist in other examples of embodiments.

The method and the open-knit article obtained with the method, thus conceived, are susceptible of numerous modifications and variations, all of  
10 which are within the scope of the appended claims; all the details may further be replaced with other technically equivalent ones.

In practice, the threads and the counts of the threads that are used may be any according to requirements and to the state of the art.

The disclosures in Italian Patent Application No. MI2004A000303  
15 from which this application claims priority are incorporated herein by reference.

Where technical features mentioned in any claim are followed by reference signs, those reference signs have been included for the sole purpose of increasing the intelligibility of the claims and accordingly, such  
20 reference signs do not have any limiting effect on the interpretation of each element identified by way of example by such reference signs.